

Spill Limitations at The Dalles Dam for 2006 Due to Spillway Wire Rope Replacement.

1. Spillway wire ropes at The Dalles Dam are being replaced on Bays 1-9 in 2006. The schedule for this replacement is shown in Table 1. By the start of the spill-for-fish season, spillbays 1-6 will be available. By May 15, bays 7-9 will be completed and available for use. Bays 10, 11, and 13 will not be repaired in 2006 and will not be available for use due to unsafe wire ropes. Bays 12, and 14-22 will be operable in 2006.
2. A limit of 21 kcfs spill per bay was set when developing spill patterns for fish passage. This threshold is based on physical model results, which show that baffle blocks become exposed at this spill level, and balloon-tag studies which showed higher injury and mortality at this spill level. Spill patterns developed for the spillwall configuration were designed to provide the best downstream egress conditions, minimize stilling basin retention time, and remain below the 21 kcfs per bay threshold. To do this, spill is concentrated to the north, with the majority of spill occurring in bays 1-6. When river flow rises above 315 kcfs, spill begins to add south of the spillwall (due to reaching the threshold level in bays 1-6), starting at Bay 7 and working south as river flow continues to rise.
3. A decision needs to be made on how to spill this year: maintain 40% spill, even when that means departing from the spill pattern, or maintain the spill pattern, even if at times we are spilling less than 40% of the total river discharge. Table 1 shows the number of spillbays required to meet 40% spill at increasing total river flows. Based on flow forecasts for 2006, it is possible that there will be times where 40% spill cannot be achieved using the spill pattern in the Fish Passage Plan. To maintain 40% spill, it may be necessary to spill on the south side of the spillway (Bays 14-22) at high river flows. This would create a poor tailrace egress condition for spillway-passed fish. The alternative is to spill less than 40% when river flow rises above the levels indicated in the table below
5. After May 15th when we have all 9 bays back and we can contain 450 Kcfs the likelihood of not being able to meet 40% spill using the fish passage spill pattern is extremely small - 5% based on mean daily flow. Power peaking most likely increases the likelihood to 10% but only for a 1 week period. Outside of that one week period the likelihood is extremely small. There is a greater probability that we will exceed the capacity of the fish spill pattern during completion of bays 7-9 (10 April – 15 May), particularly during power peaking. Much will depend on the shape of spring runoff. The first forecast for the start of spill season will be available at the end of February and these numbers can be updated based on forecasted information versus the hydrograph.

Table 1.

| Spill Bays | Date Available | Highest total river Q where spillway can meet 40% |
|-------------------|-----------------------|--|
| 1-6 | 10 April | 315 |
| 1-7 | 20 April | 360 |
| 1-8 | 30 April | 405 |
| 1-9 | 15 May | 450 |

4. Based on 2005 results, spill levels in the 25-33% range resulted in spillway passage efficiency (SPE) of 75.4% for yearling chinook, compared to an SPE of 81.6% at the 40-45% spill range. Given the relatively small difference in SPE, and the anticipated short duration and small magnitude of reductions below 40% spill, the COE recommends maintaining the FPP spill pattern in 2006, and reducing spill percentage rather than spilling through bays 14-22 to meet 40% spill. We believe the poor tailrace egress conditions created by spilling from bays 14-22 would reduce spillway survival and more than offset any increase in SPE realized by spilling 40%.